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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2008*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 October 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/9/2008*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-30 are pending.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

3.   Claim 1 is directed towards a method for changing a first scheduler in a virtual machine monitor. A 35 U.S.C. § 101 process must (1) be tied to a particular machine or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. The claimed methods for changing a first scheduler in a virtual machine monitor could be completely performed mentally, verbally, or without a machine, and no transformation of article or material is apparent, and thus do not qualify as a statutory processes.

4.   Claims 2-7 does not cure the deficiency of parent claim 1. Therefore, they are rejected for the same reason as claim 1 as above.

5.   Claim 8 recites a virtual machine monitor for changing a first scheduler. However, it appears that the virtual machine monitor would reasonably be interpreted by one of ordinary skill in the art as software per se, failing to be tangibly embodied or include any recited hardware as part of the system. Software alone is directed to a non-statutory subject matter. Applicant is advised to amend the claims to include hardware (e.g. processor and memory) to overcome the 101 rejection.

6.   Claims 9-14 does not cure the deficiency of parent claim 8. Therefore, they are rejected for the same reason as claim 8 as above.

7.   Claim 15 recites a system. However, it appears that the system would reasonably be interpreted by one of ordinary skill in the art as software per se, failing to be tangibly embodied or include any recited hardware as part of the system. Software alone is directed to a non-statutory subject matter. Applicant is advised to amend the claims to include hardware (e.g. processor and memory) to overcome the 101 rejection.

8.   Claims 16-23 does not cure the deficiency of parent claim 15. Therefore, they are rejected for the same reason as claim 15 as above.

9.   Claim 24 is directed to a signal directly or indirectly by claiming a machine readable medium because the specification recites evidence where the machine readable medium is defined as "propagated signals" on page 3 line 20. A propagated

signal does not fall into one of the four statutory categories (i.e., process, machine,

manufacture, or composition of matter).

10.   Claims 25-30 does not cure the deficiency of parent claim 24. Therefore, they

are rejected for the same reason as claim 24 as above.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

a. The claim language in the following claims is not clearly understood:

i.   As per claim 1, lines 1-2, it is uncertain how the first scheduler is

changed and what the scheduler is for (i.e. Is the first scheduler

changed by replacing it with a second scheduler? Is the first scheduler

changed by modifying its scheduling algorithm? Is the scheduler

scheduling between virtual machines?). For the purpose of examining,

it is construed that the first scheduler is replaced with a second

scheduler and the scheduler is scheduling between virtual machines.

ii.   As per claim 1, lines 3-4, it is uncertain how the second scheduler is

loaded (i.e. Is the second scheduler swapped with the first scheduler?

Is the first scheduler unloaded elsewhere? Does the first and second

scheduler exist concurrently but only one scheduler is allowed to

execute? Does the second scheduler already exists and loaded when

it's desired to execute?). For the purpose of examining, it is construed

that second scheduler is swapped with the first scheduler.

iii.   As per claim 1, lines 5-7, it is uncertain how the second scheduler is

activated, how a scheduling request is handled, and what constitutes a

scheduling process (i.e. Is the second scheduler activated by running?

Is there an activation signal sent to the second scheduler to enter a

standby state? Is the scheduling request a request to execute a

process according to the second scheduler?). For the purpose of

examining, it is construed that the second scheduler is activated when

it's executed and the scheduling request is a request to execute a

process according to the second scheduler.

iv.   As per claim 2, lines 2-3, it is uncertain how and why the virtual

machine resources are ceased (i.e. Is a virtual machine suspended?

Is the resources assigned to a virtual machine reallocated? Is a virtual

machine suspended to allow the scheduler to change? Is only one

virtual machine suspended or all?). For the purpose of examining, it is

construed, that a virtual machine, which includes its assigned

resources, to not conflict with the scheduler changes.

v.   As per claim 2, lines 4-5, it is unclear what constitutes a scheduler parameter (i.e. Is it equivalent to a scheduling request? Is the parameter specifying conditions when a scheduler change should occur?). For the purpose of examining, it is construed that the parameter is specifying conditions when a scheduler change should occur.

vi.   As per claim 3, it is uncertain why a first scheduler is unloaded before a second scheduler (i.e. Is only one scheduler allowed to execute at a time?).

vii. As per claim 4, it is unclear what constitutes a scheduler identifier, what is being routed, and how it is being routed (i.e. Is the identifier specifying what scheduler is currently executing? Is a scheduling request sent to the second scheduler instead of the first scheduler because of the identifier?). For the purpose of examining, it is construed it is construed that a scheduling request sent to the second scheduler instead of the first scheduler because of the identifier.

viii. As per claim 5, it is unclear what constitutes a function pointer array, what is being routed, and how it is being routed (i.e. Is the function pointer array a pointer to a memory spaces allocated to a scheduler to process requests? Is a scheduling request sent to the second scheduler instead of the first scheduler because of the identifier?). For the purpose of examining, it is construed it is construed that a

scheduling request sent to the second scheduler instead of the first

scheduler because of the identifier.

ix.   As per claim 6, it is uncertain what the address is for (i.e. Is the

address designating the location of the second scheduler? Is the

address the location of the scheduling request?). For the purpose of

examining, it is construed that address is designating the location of

the second scheduler.

x.   As per claim 7, lines 4-5, it is uncertain how the first scheduler is re-

activated (i.e. Is the first scheduler reloaded? Can two schedulers

execute at the same time? Is the first scheduler executing without

being loaded?).

xi.   Claims 8, 15, and 24 have the same deficiency as claim 1.

xii.   Claims 9, 18, and 25 have the same deficiency as claim 2.

xiii.   Claims 10, 19, and 26 have the same deficiency as claim 3.

xiv.   Claims 11, 20, and 27 have the same deficiency as claim 4.

xv.   Claims 12, 21, and 28 have the same deficiency as claim 5.

xvi.   Claims 13, 22, and 29 have the same deficiency as claim 6.

xvii.   Claims 14, 23, and 30 have the same deficiency as claim 7.

xviii.   As per claim 24, it is uncertain if applicant is claiming a medium or an

apparatus.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 1, 3-8, 10-17, 19-24, and 26-30 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Chalmer et al. (US 7,296,271) in view of Applicant Admitted

Prior Art, hereinafter AAPA.

12.   As per claim 1, Chalmer teaches the invention substantially as claimed including

a method for changing a first scheduler in a multitasking system (column 1 lines 48-58;

column 1 lines 62-67), comprising:

        loading a second scheduler in the multitasking system (Schedulers may be

swapped out depending on runtime considerations or the situation.) (column 11 lines

34-67; column 12 lines 1-10); and

        activating the loaded second scheduler to handle a scheduling request for a

scheduling process in place of the first scheduler (A loaded scheduler is activated to run

a process when it is invoked by either a periodic interrupt or by a software trap.)

(column 5 lines 13-22).

Chalmer does not specifically teach the method for a scheduler in a virtual machine monitor. However, AAPA teaches a scheduler in a virtual machine monitor (¶2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the method taught by Chalmer to be applied to a scheduler in a virtual machine monitor taught by AAPA because in a single scheduler/multiple algorithm situation, the scheduler may experience significant overhead in connection with determining which scheduling algorithm to run. In contrast, a multiple scheduler technique may avoid such overhead (Chalmer, column 11 lines 47-54)

The combination of Chalmer and AAPA does not specifically teach the method when the virtual machine monitor is running. However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made that the method would be performed when the virtual machine monitor is running because no actions may be performed on or by a scheduler located in virtual machine monitor unless the virtual machine monitor is running.

13.   As per claim 3, Chalmer teaches wherein the loading further comprises:
         unloading the first scheduler from the virtual machine monitor before loading the second scheduler (Only one scheduler is executed at a time. A program counter for a

first scheduler is modified to swap the first scheduler for a second scheduler.) (column 1

lines 48-54; column 1 lines 64-67; column 2 lines 1-2).

14.   As per claim 4, Chalmer teaches wherein the activating further comprises:

         replacing a first scheduler identifier with a second scheduler identifier to route

between the second scheduler and a requester that generated the scheduling request,

when the virtual machine monitor is running (When a first scheduler is replaced by a

second scheduler, a program counter variable is modified to indicate the second

scheduler should be used. A scheduling request will then be routed to use the second

scheduler to handle a scheduling process.) (column 2 lines 9-14; column 5 lines 13-22;

column 11 lines 34-54).

15.   As per claim 5, Chalmer teaches wherein the activating further comprises:

         replacing a first function pointer array pointing to a first function array of the first

scheduler with a second function pointer array pointing to a second function array of the

second scheduler to route between the second scheduler and a requester that

generated the request, when the virtual machine monitor is running (When a first

scheduler is replaced by a second scheduler, a stack pointer is modified to indicate the

second scheduler stack should be used. A scheduling request will then be routed to

use the second scheduler stack to handle a scheduling process.) (column 2 lines 14-19;

column 5 lines 13-22; column 11 lines 34-54).

16.   As per claim 6, Chalmer teaches wherein the activating further comprises:

dynamically patching an address associated with the second scheduler into the

scheduling request when the virtual machine monitor is running (Running a scheduler

includes setting a program counter to an address corresponding the selected scheduler.

A scheduling request will invoke the scheduler corresponding to the address in the

program counter.) (column 1 lines 51-54; column 2 lines 9-14; column 5 lines 13-22).

17.   As per claim 7, Chalmer teaches:

unloading the second scheduler from the virtual machine monitor when the virtual

machine monitor is running; and

re-activating the first scheduler to handle a scheduling request after the second

scheduler has been unloaded (Schedulers can be set to alternate based on runtime

considerations. Schedulers alternating will repeat the unloading and re-activating steps

as necessary.) (column 11 lines 38-40).

18.   Claims 8 and 10 recites a virtual machine monitor for changing a first scheduler,

comprising the above steps. It has the same limitations of claims 1 and 3, respectively,

above and is therefore rejected using the same art and rationale as set forth above.

19.   As per claim 11, Chalmer teaches wherein the activating logic is

further to:

replace a first scheduler identifier with a second scheduler identifier;

route between the second scheduler as identified by the second scheduler

identifier and a requester that generated the scheduling request, when the virtual

machine monitor is running (When a first scheduler is replaced by a second scheduler,

a program counter variable is modified to indicate the second scheduler should be used.

A scheduling request will then be routed to use the second scheduler to handle a

scheduling process.) (column 2 lines 9-14; column 5 lines 13-22; column 11 lines 34-

54).

20.   As per claim 12, Chalmer teaches wherein the activating logic is

further to:

replace a first function pointer array pointing to a first function array of the first

scheduler with a second function pointer array pointing to a second function array of the

second scheduler;

route between the second function array pointed by the second function pointer

array and a requester that generated the scheduling request, when the virtual machine

monitor is running (When a first scheduler is replaced by a second scheduler, a stack

pointer is modified to indicate the second scheduler stack should be used. A scheduling

request will then be routed to use the second scheduler stack to handle a scheduling

process.) (column 2 lines 14-19; column 5 lines 13-22; column 11 lines 34-54).

21.   Claim 13 recites a virtual machine monitor for changing a first scheduler,

comprising the above steps. It has the same limitations of claim 6 above and is

therefore rejected using the same art and rationale as set forth above.

22.   As per claim 14, Chalmer teaches wherein the loading logic is further to unload

the second scheduler from the virtual machine monitor when the virtual machine

monitor is running; and the activating logic is further to re-activate the first scheduler to

handle a scheduling request after the second scheduler has been unloaded (Schedulers

can be set to alternate based on runtime considerations. Schedulers alternating will

repeat the unloading and re-activating steps as necessary.) (column 11 lines 38-40).

23.   Claim 15 recites a virtual system, comprising the above steps. It has the same

limitations of claim 1 above and is therefore rejected using the same art and rationale as

set forth above.

       Chalmer teaches a requester to generate a scheduling request for a scheduling

process (column 5 lines 13-22).

24.   As per claim 16, Chalmer teaches wherein the requester further comprises at

least one of a timer (periodic interrupt), a service virtual machine, and a guest virtual

machine (column 5 lines 19-22).

25.   As per claim 17, Chalmer teaches wherein the requester is further to generate a

scheduler changing request to changing the first scheduler (Schedulers can be set to

alternate based on runtime considerations.) (column 11 lines 38-40).

26.   Claim 19 recites a virtual system, comprising the above steps. It has the same

limitations of claim 3 above and is therefore rejected using the same art and rationale as

set forth above.

27.   As per claim 20, Chalmer teaches wherein the activating logic is further to:

        replace a first scheduler identifier with a second scheduler identifier;

        route between the second scheduler as identified by the second scheduler

identifier and the requester, when the virtual machine monitor is running (When a first

scheduler is replaced by a second scheduler, a program counter variable is modified to

indicate the second scheduler should be used. A scheduling request will then be routed

to use the second scheduler to handle a scheduling process.) (column 2 lines 9-14;

column 5 lines 13-22; column 11 lines 34-54).

28.   As per claim 21, Chalmer teaches wherein the activating logic is further to:

        replace a first function pointer array pointing to a first function array of the first

scheduler with a second function pointer array pointing to a second function array of the

second scheduler;

route between the second function array pointed by the second function pointer

array and the requester, when the virtual machine monitor is running (When a first

scheduler is replaced by a second scheduler, a stack pointer is modified to indicate the

second scheduler stack should be used. A scheduling request will then be routed to

use the second scheduler stack to handle a scheduling process.) (column 2 lines 14-19;

column 5 lines 13-22; column 11 lines 34-54).

29.   Claim 22 recites a virtual system, comprising the above steps. It has the same

limitations of claim 6 above and is therefore rejected using the same art and rationale as

set forth above.

30.   As per claim 23, Chalmer teaches wherein the loading logic is further to unload

the second scheduler from the virtual machine monitor when the virtual machine

monitor is running; and the activating logic is further to re-activate the first scheduler to

handle the scheduling request after the second scheduler has been unloaded

(Schedulers can be set to alternate based on runtime considerations. Schedulers

alternating will repeat the unloading and re-activating steps as necessary.) (column 11

lines 38-40).

31.   Claims 24 and 26-30 recites a machine readable medium comprising a plurality

of instructions that in response to being executed result in an apparatus, comprising

the above steps. It has the same limitations of claims 1 and 3-7, respectively, above

and is therefore rejected using the same art and rationale as set forth above.

32.   Claims 2, 9, 18, and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the combination of Chalmer and AAPA as applied to claims 1, 8, 15,

and 24, respectively, above, and further in view of Knauerhase et al. (US

2005/0198303).

33.   As per claim 2, Chalmer teaches wherein the loading further comprises:

        receiving a scheduler changing request to change the first scheduler (column 1

lines 64-67); and loading the second scheduler in the virtual machine monitor based

upon a scheduler parameter of the scheduler changing request (column 1 lines 59-61).

        Chalmer does not specifically teach ceasing device resources owned by a

running virtual machine in response to receiving a scheduler changing request.

However, ceasing device resources owned by a running virtual machine in response to

receiving a request (¶13 lines 4-5; ¶14 lines 1-13; ¶16 lines 3-5).

        Therefore, it would have been obvious to a person of ordinary skill in the art at

the time the invention was made to modify the loading taught by Chalmer and AAPA to

include the ceasing taught by Knauerhase to allow an operation to complete without

interference from a running virtual machine (¶14 lines 1-13).

34.   Claim 9 recites a virtual machine monitor for changing a first scheduler,

comprising the above steps. It has the same limitations of claim 2 above and is

therefore rejected using the same art and rationale as set forth above.

35.   Claim 18 recites a virtual system, comprising the above steps. It has the same

limitations of claims 2 above and is therefore rejected using the same art and rationale

as set forth above.

36.   Claim 25 recites a machine readable medium comprising a plurality of

instructions that in response to being executed result in an apparatus, comprising

the above steps. It has the same limitations of claim 2 above and is therefore rejected

using the same art and rationale as set forth above.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Blake Kumabe whose telephone number is 571-270-

5593. The examiner can normally be reached on 7:30am - 5:00pm EST Monday to

Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. K./
Examiner, Art Unit 2195

/Li B. Zhen/
Primary Examiner, Art Unit 2194